REMARKS

Claims 13, 14, 16-17, and 41-43 are pending in the present application. Claim 41 has been amended. A marked-up version of this claim, showing changes made, is attached hereto as Appendix A. Claim 43 has been added to round out the scope of protection sought. Applicants respectfully request reconsideration of all rejections in light of the following amendment and remarks.

In the present Amendment, claim 41 has been amended to recite in pertinent part that "steam [is] provided in a ratio of at least 0.005 relative to other gases present in the rapid thermal process chamber." Support for this recitation is found in Applicants' specification at page 8, lines 22-25.

Claims 13, 14, 16-17, and 41-42 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Luan, et al. "Ultra Thin High Quality Ta_2O_5 Gate Dielectric Prepared by *In-situ* Rapid Thermal Processing" IEEE '98 Technical Digest, pp. 609-612 ("Luan") in view of Tseng et al. (U.S. Patent No. 6,063,698) ("Tseng"). Reconsideration is respectfully requested.

Claims 13 and 42 recite a method of fabricating a semiconductor device with "a mixture of hydrogen and oxygen gases . . . said mixture is a ratio from approximately 0.1 to approximately 0.80 of hydrogen gas to oxygen gas." Tseng simply <u>does not</u> teach this ratio.

In support of the rejection, the Office Action contends that Tseng's claim 20 provides a ratio, 0.5, that falls within Applicants' claimed range of 0.1 to 0.80. Tseng's claim 20 recites that "the oxygen is introduced at a rate of 20 standard liters per minute (SLM); and the <u>diluted</u> amount of hydrogen is introduce at a rate of 10 SLM." (emphasis added). Support is found in Tseng's specification in Col. 6, lines 58-60.

First, claim 20 only teaches the conditions for the "Mass Flow Controller" rather than a hydrogen to oxygen ratio (Col. 6, line 58). Second, Applicants are not claiming a

flow rate of H_2:O_2 gas. Claims 13 and 42 are directed to the actual ratio's of the gases themselves in the rapid thermal process chamber. Third, in the next sentence, Tseng specifically discloses that "[t]he percentage of H_2 in the O_2 and H_2 mixture [is] approximately 6%, however a range of approximately 3% to 9% is expected to obtain comprable [sic] results." (Col. 6, lines 60-62). Thus, the ratio of Tseng's H_2:O_2 gas mixture is not 0.5 as the Office Action asserts; rather, it is 0.03 to 0.09. If the H_2:O_2 gas ratio is 0.5 as the Office Action asserts, Tseng has a major enablement problem since it directly contradicts the 0.5 ratio in the next sentence. Specifically, that Tseng's H_2:O_2 gas ratio is preferably 0.06, and can be 0.03 to 0.09.

Further, it is not a matter of routine optimization to determine the optimum ratio of hydrogen to oxygen. Tseng claims a preferred ratio of H_2:O_2 gas; 0.06. In fact, Tseng teaches that the uppermost range for a H_2:O_2 gas mixture is 0.09. As the Office Action indicates, Luan does not teach a wet oxidation temperature in the range of 750°-950°C, much less a ratio of H_2 to O_2 of about 0.1 to 0.8. Accordingly, the combination of the cited references would expressly teach not going above 0.09 for a H_2:O_2 gas ratio.

Claims 14 and 16-17 depend from and contain all of the limitations of independent claim 13. For at least these reasons, claims 14 and 16-17 are allowable along with claim 13. Accordingly, withdrawal of the rejection for claims 13, 14, 16-17, and 41-42 is solicited.

Claim 14 further recites that the "wet oxidation is performed at a temperature in a range of about 750°C to about 950°C." Luan illustrates in FIGS. 2, 4, and 6, a Ta_2O_5/Al gate. Tseng discloses that it is not possible to perform an oxidation step to cure plasma etch damage when a metal gate is employed, such as used in Luan. Tseng teaches that "[a]t temperatures higher than 520°C . . . aluminum gates would be destroyed, degraded, severely oxidized ." (Col. 3, lines 1-8). Thus, the combination of the cited references completely contradict each other since Luan teaches an anneal of 600°C. Tseng teaches thermal constraints with the use of an aluminum gate. Further, even if the references are combinable, one skilled in the art would not perform a wet oxidation higher than 600°C

since Tseng inherently teaches that higher temperatures degrade metal gates. Accordingly, the cited references would not suggest a wet oxidation anneal in a temperature range of "750°C to about 950°C." This is an additional reason for the allowance of claim 14.

The cited references do not teach that "steam [is] provided in a ratio of at least 0.005 relative to other gases present in the rapid thermal process chamber." Accordingly, withdrawal of the rejection for claim 41 is solicited.

In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to withdraw the outstanding rejection of the claims and to pass this application to issue.

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Respectfully submitted,

By _____

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